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ABSTRACT

This paper discusses the role of information technology in American social studies classrooms. Three main topics are addressed including: (1) the potentially-powerful applications of technology in social studies, based on current trends in social studies education; (2) the current status of technology use in social studies education and factors that have facilitated the rise of technology use; and (3) a description of a number of factors that limit the achievement of technology's potential for social studies. Among the limiting factors to technology usage in education are the availability of the up-to-date technology in the classroom, the cost of expansion of technology, and the move toward national and state curriculum standards that could limit innovative uses of technology. A number of ways that technology can help achieve social studies goals is suggested.(EH)

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Information Technology in U.S. Social Studies Classrooms: Potentials and Realities.

by Charles S. White

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INFORMATION TECHNOLOGY IN U.S. SOCIAL STUDIES CLASSROOMS: POTENTIALS AND REALITIES

Invited Address

Korea-U.S. Symposium
"Enhancing Mutual Understanding between Korea and the U.S. through Social Studies Education in the Information Age"
Korean Social Studies Association
Kyungsang National University
Jinju, Republic of Korea
August 8, 1997

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It is a pleasure to be with you today to discuss the role of information technology in American social studies classrooms. During the question period at the conclusion of my speech, and perhaps later in the conference, I hope to have the chance to learn more about the state of information technology in your classrooms and to discuss opportunities for collaboration. For the moment, however, I intend to address three main topics in my speech. First I want to describe potentially-powerful applications of technology in social studies, based on current trends in social studies education in the United States. Second, I will describe the current status of technology use in social studies education and factors that have facilitated the rise in technology use. Finally, I will describe a number of factors that limit the achievement of technology's potential for social studies in the U.S.

Trends in U.S. Social Studies and the Potential of Information Technology

If we view technology as a means to an end, rather than as an end in itself, then we ought to begin with an understanding of the ends to be achieved. We want students to construct sophisticated understandings of the very complex knowledge domains of history and the social sciences. This requires not only developing an ordered and deep knowledge of individual disciplines, but also of the interrelationships among disciplines. Problems of public policy, by their very nature, are interdisciplinary. In a democracy, where citizens must deliberate on and resolve

public policy problems, interdisciplinary thinking is essential. We recognize that effective citizenship also requires skill in acquiring, organizing, and judging information from a variety of sources. This promotes both informed decision making and life-long learning. We believe that most problems citizens confront, and most work-place tasks today, require them to work with others. Collaborative learning and problem solving, then, are among the important goals of social studies education in the Unites States. Finally, we believe that cross-cultural understanding in a global age is essential to world peace and cooperation. This list of goals and priorities is certainly not exhaustive, but each has figured prominently in the dialogue among U.S. educators about how the power of information technology might best be harnessed to achieve social studies goals.

If I were to summarize technology's potential for social studies in a single concept, it would be "knowledge navigation." Not only can well-designed software portray knowledge structures visually, as a kind of knowledge map. The interactive nature of information technology also allows students to navigate within this structure, to traverse webs of interconnected information, to "walk around and through it," if you will. Such technology applications help students grasp the whole and its parts, to make the complexity of a discipline manageable. Concept mapping or semantic network tools like SemNet, Learning Tool, and Inspiration can help teachers organize historical and social science information for students. Indeed, students can use these tools to represent their own understanding of social studies content, and to modify their maps as their understanding deepens. Producers of educational software, CD-ROM encyclopedias, and sites on the World Wide Web are all becoming aware of the power of visualization in organizing information, and social studies education will benefit significantly from further application of "visual data management" techniques.

Well-designed technology applications can help students to explore a topic using diverse media. A friend of mine noted recently that social studies is not simply a series of symbols in a sequence on a page. It consists of sights and sounds as well. The social studies involve art, music, dance, and oratory. The social studies involve places and people, architecture and personal remembrance. Interactive multimedia products and development tools can show students in

powerful ways how the content of the social studies draws on many disciplines to achieve a broad understanding of our world and its history.

For locating primary source material (whether text-based, audio, or visual) and for exercising important information retrieval and evaluation skills, few technologies have greater potential for social studies education than the Internet and its World Wide Web interface. There are two reasons for this. First, the Internet's e-mail and mailing list functions can support some of the collaborative learning and problem solving experiences we want to promote in social studies. These same functions can support an increasing volume of cross-cultural electronic interaction, and this can only serve to advance global understanding over time. Second, the World Wide Web opens the social studies classroom to the virtually limitless pool of information residing in websites around the world -- at universities, museums, research centers, libraries, and elsewhere.

Of course, it is one thing to speak of potential and quite another to speak of reality. As is true for most human endeavors, the use of technology in U.S. social studies classrooms falls short of what we hope to achieve. Nonetheless, technology is being put to productive work in a growing number of classrooms. I would like to turn to descriptions of that work now and to a discussion of the factors that support the growth of technology use in social studies education.

How Technology is Used in Social Studies and Factors that Support Its Use

Among the major subject areas in the public school curriculum, social studies teachers are the least likely to use computer-based technology, which has typically been viewed as the domain of mathematics and, more recently, of language arts (for writing courses). Nonetheless, a growing number of teachers have introduced computers into their classrooms, at least as a supplement to traditional instruction. Unfortunately, little hard data are available to provide a clear picture of current uses of technology in social studies.

I will divide my description of current use into three categories: computer-based instruction, videodisc/CD-ROM, and the Internet. First, however, let me speak briefly about broadcast and cable television. Television is a well-established technology in U.S. schools and has been for many years. Cable television has expanded the programming available to schools,

and more than three-quarters of U.S. schools have cable. Videotapes and videocassette recorders are standard instructional tools for social studies teachers. My particular focus in this speech, however, is on newer electronic technologies. (I should note, though, that cable technology is likely to become even more central to schools with the development of high-speed, reliable cable modems to transmit electronic data.)

Turning to my three categories, let me begin with computer-based instruction. This includes drill-and-practice, tutorial, and simulation programs, all of which can be found to some degree in U.S. schools. In social studies, geography computer programs that help reinforce place names (states of the United States, state capitals, continents and countries) are popular at the elementary level. Some very imaginative simulations have been developed for elementary and middle school social studies. For example, a series of simulations called "Decisions, Decisions" challenges middle school students to grapple with contentious social issues by weighing alternatives and analyzing consequences. A particular strength of this product is that it is designed for use in classrooms where only one computer may be available. This is an important feature. For many social studies classrooms, a computer on a cart is wheeled into the room for temporary use. Access to a computer lab is often difficult, since the lab tends to be heavily used by mathematics or writing classes. In short, social studies teachers manage the use of computer-based instruction as one of several activities, available at one or more computer stations located in the back of the classroom. These computers may be permanently assigned to the classroom or rotated among several classrooms throughout the school year.

A similar pattern of use accompanies videodisc and CD-ROM applications in social studies. In this case, we see two modes of use in U.S. schools. In the first mode, the teacher uses the videodisc or CD-ROM as part of his or her presentation, much as one would use a videotape or slide projector. In the second mode, students work at a multimedia work station either in the classroom or in the school's library or media center. In the second mode, the technology becomes one of a range of research resources to support student learning. As of the 1995-1996 school year, a little more than a third of U.S. schools reported having videodisc technology; more than half of

the schools had CD-ROM hardware and software. The range of software in this category -- videodiscs and CD-ROM discs -- has been growing rapidly for social studies. CD-ROM-based encyclopedias are very popular among teachers who use this technology. Collections of primary source materials are appearing on CD-ROM, including historical documents, photographs, maps, audio clips, and digitized video clips. Social studies teachers value having collections of primary sources easily accessible to support both their lectures and their students' research.

The technology that is generating the greatest interest among social studies educators in the U.S. today is the Internet. Teachers are using the Internet both as a medium of communication with distant people and places and as a vast database of retrievable material for instruction. Here are some examples of the Internet's use to bring people and places closer together.

The Global SchoolNet Foundation helps schoolchildren to share their field trips with distant peers. The California-based network formerly known as FrEDMail has established a listserver called Fieldtrips-L. It is designed not for discussion but as a vehicle for helping teachers easily exchange information about their field trips and excursions to local resources. The process of establishing links between field trips and interested teachers is typical of many projects. About a month before the planned trip, the teacher posts a brief announcement to the Fieldtrips-L list to let other subscribers know about the visit. From responses to the posting, the teacher can select a few "partner" classes who are interested in sharing in the trip. Students then go on the field trip armed with questions from the partner classes. Following the trip, students share their answers and experiences with the partner classes. At the conclusion, teachers can have the class write a brief group summary of the field trip and post it to the listserver, for other subscribers to read.

The Scholastic Network provides support for instruction in social studies as well as other areas in the curriculum. Formerly a publisher of traditional paper-based materials, Scholastic, Inc. expanded its efforts into software, then into the Internet. Through the Scholastic Network, students are occasionally invited to join in explorations of distant places, at least vicariously. A 1996 expedition followed a teacher's trip to Antarctica and New Zealand. Sandy Markle, a former elementary teacher, spent nine weeks exploring these regions, sending daily written reports and

digitized photographs to her on-line "journal" for students to view. Students who wished to communicate with Sandy could leave messages for her, some of which would be answered each week by e-mail. While much of the information she shared related to science topics, her commentary about New Zealand included its people and history. MayaQuest is a similar project, focusing on the study of Maya archeological sites in Central America.

The field trips listserver is only one example of the projects carried out over the Internet. Students participating in the Electronic Emissary Project have compiled an oral history of World War II and studied the Middle Ages and civil rights with the help of distant subject-matter experts. The Electronic Emissary Project, first piloted in the spring of 1993, is supported by the Texas Center for Educational Technology. The Emissary Project pairs subject matter expert volunteers with teachers and their students who are studying in the fields of the expert's specialty.

The Internet can also support university methods instruction. For example, during the 1994 spring semester, two classes of preservice social studies methods students at distant university sites collaborated on the development of teaching units based on a comparative historical study of places in each site. Using electronic mail and other communication technologies, teams of middle education methods students in my middle school social studies methods class worked with teams of methods students at Western Illinois University in Macomb, Illinois. The students identified social studies concepts and generalizations relevant to both historic places, exchanged ideas on social studies teaching strategies, and explored the range of local, state, and national resources available to support teaching history with places. At the conclusion of the course, students from each class exchanged teaching units that incorporated historic sites in both Illinois and in my region (White 1997).

Discussion about the Internet's World Wide Web as an instructional resource for social studies teachers dominates the professional literature today. In the United States, journals are glutted with articles about "the Web" and the best "websites" for teachers and students. According to a recent survey, about 65 percent of U.S. schools have access to the Internet (although few individual classrooms are wired for Internet use). Where access is available, teachers use the Web

to retrieve materials for instruction, including lesson plans and documents. A growing number of students are using the Web to find information for social studies projects and research papers. While some students have access to the Web at their homes, most will use the school's equipment or carry out their information searches at a local public library.

While still a relatively small component of social studies teaching and learning in U.S. schools, technology use in schools continues to grow exponentially. There are a number of factors that have contributed to this growth. First has been a significant level of funding for technology, largely at the local level but also supported by state governments and the U.S. government. This investment has reduced the student-to-computer ratio from 125:1 in the 1983-84 school year to 9:1 in the 1996-97 school year. Funding for technology nation-wide has nearly doubled in the last five years, reaching over $500 million. About one-third of U.S. teachers and students have computers in their homes, and access to the Web at home is likely to increase with the advent of WebTV (a technology that does not require the purchase of a computer). Internet access in schools will also increase as a result of the 1996 Telecommunications Act, which will lower a school's telephone costs of Internet access by as much as 90 percent.

Productive use of technology in social studies classrooms is also aided by the growing range of instructional applications in the education marketplace. Numerous textbook companies have launched websites to support and supplement the use of their traditional textbooks. Virtually every television network, newspaper, and journal has a website that provides in-depth information beyond that presented in their primary product. Professional education journals like Social Education, published by the National Council for the Social Studies, have launched new columns and features that describe and evaluate websites for classroom use. Professional organizations, university research centers, and individual teachers are producing websites of recommended websites.

Also influencing the spread of technology in U.S. social studies classrooms has been the establishment of technology standards for teacher certification. Nearly all states in the United States require that new teachers have at least some technology training as a condition for obtaining

a teaching license. Over time, this has resulted in an influx of new teachers with at least a modicum of experience with technology tools. Individual states have also adopted curriculum standards that require K-12 instruction in technology use.

All of these factors have combined to produce a powerful push for greater use of technology throughout the K-12 curriculum, and social studies has certainly been one beneficiary of this push. There are several factors, however, that constitute a drag or tug against progress in this area. To conclude my presentation today, I want to describe these limiting factors. I will be interested to know if any of these limitations sound familiar to you.

Obstacles to Achieving Technology's Potential in U.S. Social Studies

I stated earlier that the current student-to-computer ratio in American schools is 9:1. There are three problems that are not captured in that figure. First, perhaps half of these computers are so old that they cannot be easily used for Internet access. If you count only those computers that are capable of full Web access, the ratio grows to 35:1. Second, even a 9:1 ratio does not permit the kind of intensive use of technology that would achieve its full potential. Third, there are considerable inequities in the distribution of the technology in the United States. For example, while 65 percent of schools overall have access to the Internet, only 37 percent of schools with high populations of poor students have access. Home access to technology is similarly skewed by family income.

Expanding the technology base in schools is a costly proposition, as you know. Schools in my country buy equipment sparingly and hold on to it for a long time. Regular replacement of outdated equipment is difficult to finance, as are standard maintenance, initial software acquisition, the inevitable software upgrades, and technology personnel.

Ironically, the current trend toward national and state curriculum standards in the United States may limit innovative uses of technology. Much of the emphasis in standards development has been on the acquisition of factual content knowledge that will be the subject of frequent testing. Because of the potentially serious consequences of poor performance on these tests, teachers and schools will be tempted to devote a substantial amount of instructional time preparing for short-

term recall of information rather than long-term knowledge construction. Whether this happens, of course, depends on the nature of the tests.

Larry Cuban observed that four conditions are necessary for technology to be widely used in schools: (1) the technology helps teachers achieve their instructional goals, (2) the benefits of technology use outweigh the costs and efforts required to use it, (3) most of the impediments to use are removed, and (4) sufficient resources are allocated to support teachers' use of technology, particularly teacher training. I have suggested a number of ways that technology can help achieve social studies goals, in answer to the first of Cuban's conditions. We will see in the future how assessment mandates alter the role technology plays in this regard. With a relatively sparse research base and limited anecdotal information, it is not clear that many schools have met the second condition. Technology use costs not only money but time -- particularly the teacher's time to prepare for classroom use of technology. These new information technologies in social studies also tend to be most powerful when they are placed in the control of the learner. Letting students have more control over their learning is an uncomfortable prospect for some teachers -- another "cost," if you will. Cuban's third and fourth conditions will require substantially greater investments of money. Many universities, state education departments, and local schools are providing more opportunities for teacher training. But few U.S. schools can reasonably claim that they have met all of Cuban's conditions.

Conclusion

In this brief time with you today, I have endeavored to describe the current thinking in the United States on the use of technology in social studies classrooms. I would be delighted to know what your thoughts are on this subject. Perhaps we share the view that the technology we use is less important than the reasons for which we use it. The American social studies scholar Shirley Engle (1985) reminded us a dozen years ago of a comment by Albert Einstein -- that, for the first time in history, there is a surplus of means over ends. Technology is a means to an end, and is of limited usefulness in helping us decide on important ends. The field of social studies education is best served by attending first to the ends -- to what is worth knowing, what is worth

contemplating, what is worth doing. Then we can determine what tools will help us extend our reach to these ends. However, in my remarks today, I have tried to suggest ways in which social studies educators in the United States have been working to use technology to extend the reach of their teaching and the scope of their students' learning.

I appreciate your kind attention and I look forward to answering any questions you may have. Thank you.

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